

What is claimed is:

1. A method for introducing a population of progenitor cells into an individual, comprising the steps
5 of:

(a) administering to an individual an amount of gadolinium chloride effective to ablate a first population of resident cells of said individual, and

(b) administering to said individual a
10 population of progenitor cells,

wherein cells of said population of progenitor cells replace cells of said first population of resident cells.

2. The method of claim 1, wherein said first
15 population of cells is contained in a tissue selected from liver, lung, spleen and bone marrow.

3. A method for introducing a population of Kupffer cells into an individual, comprising the steps of:

20 (a) administering to an individual a Kupffer cell toxin, wherein said toxin ablates a first population of Kupffer cells of said individual, and

(b) administering to said individual a population of Kupffer cell progenitors,

25 wherein said population of Kupffer cell progenitors replaces said first population of Kupffer cells, thereby providing a second population of Kupffer cells.

4. The method of claim 3, wherein said toxin
30 comprises gadolinium chloride or clodronate liposomes.

5. The method of claim 3, wherein said Kupffer cell toxin is administered by intravenous injection.

6. The method of claim 3, wherein said population of Kupffer cell progenitors is administered by
5 intravenous injection.

7. The method of claim 3, wherein said population of Kupffer cell progenitors comprises autologous cells obtained from said individual.

8. The method of claim 3, wherein said
10 population of Kupffer cell progenitors comprises heterologous cells obtained from a donor individual.

9. The method of claim 3, wherein said population of Kupffer cell progenitors is genetically modified.

15 10. The method of claim 3, wherein said population of Kupffer cell progenitors is genetically modified to contain a transgene.

11. The method of claim 10, wherein said transgene expresses a macrophage gene product deficient
20 in said individual.

12. The method of claim 11, wherein said gene product deficient in said individual comprises D-glucosyl-N-acylsphingosine glucosylhydrolase.

13. The method of claim 10, wherein said transgene expresses an inhibitor of a pro-atherogenic molecule.

14. The method of claim 13, wherein said
5 inhibitor of a pro-atherogenic molecule is selected from the group consisting of a paraoxonase polypeptide, cholesterol-7 α -hydroxylase polypeptide, apolipoprotein A1, or a functional fragment thereof.

15. The method of claim 10, wherein said
10 transgene expresses a hormone.

16. The method of claim 15, wherein said hormone is selected from the group consisting of insulin and erythropoietin.

17. The method of claim 10, wherein said
15 transgene comprises a macrophage-specific expression element.

18. The method of claim 17, wherein said macrophage-specific expression element comprises a macrophage-specific promoter or a macrophage-specific
20 enhancer.

19. The method of claim 17, wherein said macrophage-specific expression element comprises a class A scavenger receptor promoter or enhancer.

20. The method of claim 3, wherein said
25 population of Kupffer cell progenitors is modified to inhibit expression of a macrophage gene.

21. The method of claim 3, wherein said individual is a human.

22. The method of claim 3, wherein said individual is a non-human mammal.

5 23. A method for transiently introducing a population of Kupffer cells into an individual, comprising the steps of:

 (a) administering to an individual a Kupffer cell toxin, wherein said toxin ablates a first population
10 of Kupffer cells of said individual;

 (b) administering to said individual a population of Kupffer cell progenitors,
 wherein said population of Kupffer cell progenitors replaces said first population of Kupffer
15 cells, thereby providing a second population of Kupffer cells, and

 (c) administering to said individual a Kupffer cell toxin, wherein said toxin kills said second
population of Kupffer cells and wherein a third
20 population of Kupffer cell progenitors replaces said second population of Kupffer cells.

24. The method of claim 23, wherein said third population of Kupffer cells is administered to said individual.

25. A method for reducing a disease or condition, comprising the steps of:

(a) administering to an individual a Kupffer cell toxin, wherein said toxin kills a first population
5 of Kupffer cells of said individual, and

(b) administering to said individual a population of Kupffer cell progenitors containing a nucleic acid that encodes a gene product,
wherein said population of Kupffer cell
10 progenitors replaces said first population of Kupffer cells, thereby providing a second population of Kupffer cells and expresses an effective amount of said gene product to reduce said disease or condition.

26. The method of claim 25, wherein said
15 disease comprises atherosclerosis.

27. The method of claim 26, wherein said gene product comprises an inhibitor of a pro-atherogenic molecule.

28. The method of claim 25, wherein said
20 disease comprises Gaucher disease.

29. The method of claim 30, wherein said therapeutic gene product comprises D-glucosyl-N-acylsphingosine glucohydrolase.

30. The method of claim 27, wherein said
25 disease comprises diabetes.

31. The method of claim 30, wherein said therapeutic gene product comprises insulin.

32. The method of claim 25, wherein said condition comprises inflammation.

33. The method of claim 32, wherein said transgene inhibits 12/15 lipxygenase, 5-lipxygenase,
5 cytokine secretion or activation of Toll-like receptor 4.

34. A method for reducing a disease or condition, comprising the steps of:

(a) administering to an individual an amount of
10 gadolinium chloride effective to ablate a first population of resident cells of said individual, and

(b) administering to said individual a population of progenitor cells containing a nucleic acid that encodes a gene product,

15 wherein said population of progenitor cells replaces resident cells of said first population, thereby providing a population of progenitor cells capable of expressing said gene product to reduce said disease or condition.

20 35. A method for transiently reducing a disease or condition, comprising the steps of:

(a) administering to an individual a Kupffer cell toxin, wherein said toxin kills a first population of Kupffer cells of said individual;

25 (b) administering to said individual a population of Kupffer cell progenitors containing a nucleic acid that encodes a gene product, wherein said population of Kupffer cell progenitors replaces said first population of Kupffer cells, thereby providing a
30 second population of Kupffer cells and expresses an

effective amount of said gene product to reduce said disease or condition, and

(c) administering to said individual a Kupffer cell toxin following said reduction in said disease or
5 condition, wherein said toxin kills said second population of Kupffer cells, whereby a third population of Kupffer cell progenitors replaces said second population of Kupffer cells.

36. The method of claim 35, wherein said third
10 population of Kupffer cells is administered to said individual.

37. A method for stimulating an immune response against an antigen, comprising the steps of:

(a) administering to an individual a Kupffer
15 cell toxin, wherein said toxin kills a first population of Kupffer cells of said individual, and

(b) administering to said individual a population of genetically modified Kupffer cell progenitors containing a transgene that encodes said
20 antigen,

wherein said population of Kupffer cell progenitors differentiates into a second population of Kupffer cells, replaces said first population of Kupffer cells and expresses an effective amount of said antigen
25 to stimulate an immune response.

38. The method of claim 34, further comprising the step of:

(c) administering to said individual a Kupffer cell toxin following said stimulation of said immune
5 response, wherein said toxin kills said second population of Kupffer cells, whereby a third population of Kupffer cell progenitors replaces said second population of Kupffer cells.